

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A photoelectric sensor comprising:  
a light projecting section projecting detection medium light to a detection object region; and  
a light receiving section receiving reflecting light or transmitted light from the detection object region, the sections being in a single piece or in separate pieces, wherein the light projecting section includes:  
a light source generating the detection medium light; ~~[[and]]~~  
a light projecting lens for collimating or collecting the detection medium light from the light source to form a beam spot or a light collecting point in the detection object region;  
a transparent light transmissive element interposed between the light source and the light projecting lens; and  
a deflection angle adjusting means arrangement capable of finely adjusting an optical axis deflection angle of the detection medium light projected to the detection object region from the light projecting section, the deflection angle adjusting arrangement being arranged such that at least one of the light source, the light projecting lens and the transparent light transmissive element, is movable with respect to another of the light source, the light projecting lens and the transparent light transmissive member.
2. (Currently amended) The photoelectric sensor according to claim 1, wherein the ~~deflection angle adjusting means is a transparent light transmissive medium, having element has~~ a flat incidence plane for the detection medium light and a flat emission plane therefor, and ~~wherein changing a change in an incidence angle of the detection medium light based on~~ is induced by a change in a position of the transparent light transmissive element thereof relative to the detection medium-light source.
3. (Currently amended) ~~[[The]] A~~ photoelectric sensor ~~according to claim 1,~~ comprising:  
a light projecting section projecting detection medium light to a detection object region; and  
a light receiving section receiving reflecting light or transmitted light from the detection object region, the sections being in a single piece or in separate pieces, wherein the light projecting section includes:

a light source generating the detection medium light;

a light projecting lens for collimating or collecting the detection medium light from the light source to form a beam spot or a light collecting point in the detection object region; and

deflection angle adjusting means capable of finely adjusting an optical axis deflection angle of the detection medium light projected to the detection object region from the light projecting section.

wherein the deflection angle adjustment means is a plane-parallel glass plate, interposed in an optical path between the light source and the light projecting lens, and supported rotatably about an axis orthogonal to the optical path.

4. (Currently amended) The photoelectric sensor according to claim 3, wherein the light source and the light projecting lens are integrally connected ~~fixed~~ to an optical base ~~in a single piece~~, wherein the plane-parallel glass plate is rotatably supported ~~[[by]]~~ on the optical base ~~[[with]]~~ by a glass holder ~~interposed therebetween~~, and wherein a volume control operator for ~~[[a]]~~ rotation ~~operation~~ of the plane-parallel glass plate is provided to the glass holder.

5. (Currently Amended) The photoelectric sensor according to claim 1, further comprising a light beam adjusting means device for performing distance adjustment of a light collecting point of light emitted from the light projecting lens.

6. (Currently amended) A photoelectric sensor ~~according to claim 1~~, further comprising:

a sensor head case having a light projecting window in the front surface; and

~~[[an]]~~ a selectively interchangeable option unit, capable of being mounted in a ~~freely~~ selectively mountable/demountable manner at the front surface of the sensor head case, and holding a light beam changing lens at a position aligned with the light projecting window ~~[[with]]~~ by way of a lens holder ~~interposed therebetween~~, wherein the sensor head case contains:

a light source generating detection object light;

a light projecting lens collecting the detection medium light from the light source to emit the detection medium light from the light projecting window;

a transparent light transmissive element which is interposed between the light source and the light projecting lens; and

light beam adjusting means- arrangement for performing distance adjustment of a light collecting point of light emitted from the light projecting window said light beam adjusting arrangement comprising a device for moving at least of the light source, the light projecting lens and the transparent light transmissive element, with respect to another of the light source, the light projecting lens and the transparent light transmissive element.

7. (Currently amended) The photoelectric sensor according to claim 6, wherein the light beam changing lens is a light beam changing lens capable of a uniform diffusion along ~~[[the]]~~ an entire periphery thereof.

8. (Original) The photoelectric sensor according to claim 6, wherein the light beam changing lens is a plane diffusion type light beam changing lens.

9. (Previously presented) The photoelectric sensor according to claim 6, wherein the lens holder holding the light beam changing lens is rotatable about an optical axis.

10. (New) A photoelectric sensor according to claim 1, wherein the projection lens is movable in a direction essentially parallel to its optical axis.

11. (New) A photoelectric sensor according to claim 1, wherein the transparent light transmissive member is rotatable about an axis which is essentially orthogonal to an optical axis of the light projection lens.

12. (New) A photoelectric sensor according to claim 1, wherein the transparent light transmissive element is movable in a direction which is essentially orthogonal to an optical axis of the light projection lens.

13. (New) A photoelectric sensor according to claim 1, wherein the transparent light transmissive element is a plane-parallel glass plate.

14. (New) A photoelectric sensor according to claim 1, wherein the transparent light transmissive element is a non-plane-parallel glass plate.
15. (New) A photoelectric sensor according to claim 14, wherein the transparent light transmissive element is essentially wedge-shaped.
16. (New) A photoelectric sensor according to claim 1, wherein the light source is movable in a direction which is essentially orthogonal to an optical axis of the light projection lens.